

CICHLASOMA PASIONIS, A NEW SPECIES OF CICHLID  
FISH OF THE THORICHTHYS GROUP, FROM THE  
RIO DE LA PASION, GUATEMALA<sup>1</sup>

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INTRODUCTION

Among cichlid fishes recently collected by the writer in Guatemala, an apparently undescribed species of *Cichlasoma* was detected, during the process of identification. The present new species belongs to the group originally described as the genus *Thorichthys* by Meek (1904: 222). Recently, *Thorichthys* was discussed by Miller and Nelson (1961) and provisionally regarded by them only as a species group within the genus *Cichlasoma*.

This paper is the result of an expedition conducted in Guatemala, during June, 1961, by the Ichthyological Laboratory and Museum of the University of Miami. Esso Standard (Guatemala), Inc., kindly provided living quarters and transportation at Sayaxché, Department of El Petén. The author is indebted to Mr. Walter B. Spangler of Esso Standard, whose initial encouragement and continued cooperation made the expedition possible. The cooperation of Panamerican World Airways is also gratefully acknowledged.

The type specimens and other material referred to in this study are deposited in the University of Miami Ichthyological Museum (UMIM).

Measurements and counts were made according to methods already described by the author (Rivas, 1960: 131, 132) with the following modifications and additions. The head length was measured to the posteriormost point on the margin of the opercular membrane. The length of the middle caudal rays was measured from the middle of the caudal base. The length of the sixth and the last dorsal spine and of the last anal spine was measured from the base of the erect spine. All the gill rakers on the first arch were counted, including those above the angle. The standard length is always stated as "length" and the proportions are expressed in thousandths of the length.

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*Cichlasoma pasionis*, new species

Figure 1



Fig. 1. Three syntopic species of *Cichlasoma* of the *Thorichthys* group, from the Río de la Pasión at Sayaxché, Guatemala. Upper, *C. hyorhynchum*, 52 mm. in length, UIMM 4019. Middle, *C. pasionis*, holotype 61.3 mm. in length, UIMM 4872. Lower, *C. champotonis*, 55.2 mm. in length, UIMM 4016. (Photographed by the author).

The holotype is an adult specimen 61.3 mm. in length, collected by Luis Rene Rivas in the Río de la Pasión, of the Río Usumacinta system, at Sayaxché, Department of El Petén, Guatemala, on June 14, 1961 (UMIM 4872). The paratypes, collected with the holotype, comprise one adult specimen 54.5 mm. in length, two young 24.5 and 25.1 mm. in length, and four juveniles 13.0 to 15.4 mm. in length (UMIM 4017).

In the following description, the proportions and the number of gill rakers and lateral line scales do not include those of the four juvenile paratypes in which the characters are not all fully developed. The lateral line scales are not fully developed in the two young paratypes. The proportions of the holotype are given first, followed by those of the adult and the young 24.5 and 25.1 mm. paratypes respectively, in parentheses.

Predorsal length, 455 (448, 442, 438). Prepelvic length, 413 (408, 429, 415). Preanal length, 617 (615, 612, 578). Head length, 408 (403, 400, 399). Snout length, 175 (162, 131, 124). Maxillary length, 126 (114, 110, 108). Orbit diameter, 129 (128, 143, 147). Suborbital width, 111 (96, 61, 64). Interorbital width, 134 (110, 118, 112). Body depth, 455 (422, 421, 415). Caudal peduncle depth, 147 (143, 131, 135). Pectoral fin length, 397 (374, 352, 370). Pelvic fin length, 363 (356, 322, 350). Anal fin length, 538 (534, 490, 518). Middle caudal rays length, 320 (323, 326, 347). Sixth dorsal spine length, 224 (233, 192, 227). Last dorsal spine length, 193 (200, 184, 199). Last anal spine length, 180 (184, 163, 191). Dorsal base length, 555 (534, 530, 518). Anal base length, 333 (319, 306, 322).

Dorsal spines 15 and dorsal rays 10 in the holotype and the seven paratypes. Anal spines 8 in the holotype and six paratypes and 9 in one juvenile paratype. Anal rays 7 in one juvenile paratype, 8 in the holotype, the adult paratype, the 24.5 mm. paratype and three juvenile paratypes, and 9 in the 25.1 mm. paratype. Pectoral rays 13 in one juvenile paratype and 14 in the holotype and the other six paratypes. Gill rakers 18 in the 24.5 mm. paratype, 19 in the holotype and the 25.1 mm. paratype, and 20 in the adult paratype. Upper lateral line scales 19 in the holotype and 21 in the adult paratype. Lower lateral line scales 10 in the holotype and the adult paratype.

In the young and adults, the predorsal contour is very slightly convex, nearly straight. In the juveniles, the predorsal contour is more markedly convex. The dorsal contour, evenly convex along

the dorsal fin base, converges with the equally convex ventral contour along the anal fin base, to the beginning of the caudal peduncle. The dorsal and ventral contour of the caudal peduncle, are very slightly concave and converge towards the vertical from the caudal base. The depth of the caudal peduncle, at the caudal base, is about three fourths of the distance between the ends of the dorsal and anal fin base. The highest point on the dorsal contour occurs at the origin of the dorsal fin. The lowest point on the ventral contour occurs about midway between the anus and the insertion of the pelvic fin. The greatest depth of the body occurs on the vertical from the lowest point on the ventral contour. The preventral contour, from the mandible tip to the insertion of the pelvic fin, is nearly straight and less convex than the predorsal contour in the juveniles and young. In the adults, the preventral contour is somewhat more convex than the predorsal contour.

The dorsal fin origin is about on the same vertical that passes through the insertion of the pectoral fin. The dorsal spines increase rather rapidly in length from the first to the sixth and seventh which are the longest and subequal in length; thence, the spines gradually decrease in length to the twelfth and thirteenth which are slightly shorter than the last two spines. In the holotype and the adult paratype, the soft dorsal fin is produced into a filament that reaches to (paratype) or beyond (holotype) a vertical from the middle of the caudal fin. In these two specimens, the anal fin is sharply pointed but not filamentous and its tip reaches to a vertical from the basal third of the caudal fin. In the juveniles and young, the soft dorsal and anal fin reach to about the same vertical from the basal third to fifth of the caudal fin. The anal origin is on a vertical from the ninth dorsal spine. The anal spines increase rapidly in length to the fourth which is about equal to the fifth, sixth and seventh. The last and longest anal spine is slightly longer than the preceding four. The pectoral fin is sharply pointed and reaches to the vertical from the base of the eighth anal spine. The pelvic fin is produced into a filament that reaches to the base of the sixth anal spine or slightly beyond, but not to the base of the seventh spine. The insertion of the pelvic fin is slightly in advance of a vertical from the insertion of the pectoral fin. The caudal fin is evenly emarginate with rather sharp angles not produced into filaments. There are no supplementary lateral lines on the caudal fin.

The mouth is well protractile and the premaxillary processes extend to a vertical from the anterior margin of the orbit. The lower jaw projects slightly beyond the upper with the mouth closed. The margin of the lower lip is continuous but not the entire lip-fold which has an incipient frenum. The posterior tip of the maxillary reaches to the vertical from a point midway between the nostril and the anterior margin of the orbit.

The outer canine teeth, in both jaws, are uniserial and much larger than the inner canines. There are about 17 or 18 on each side in the upper jaw, gradually increasing in size towards the symphysis. In the lower jaw, about 5 of the outer canines on each side of the symphysis are more or less abruptly larger than the rest. In both jaws, the inner canines are arranged into about three ill-defined rows which converge backwards, on each side, into a more or less irregular single row. The outer and some of the inner teeth have brown tips.

The following color description is based on the holotype and the adult paratype only, after six months of preservation. The eight type specimens were fixed in ten percent formalin in the field and transferred to sixty percent ethyl alcohol about ten days later.

Sides of body with seven dark brownish-gray vertical bars wider than the pale gray interspaces. The first bar crosses the nape in front of the dorsal fin and fades at the beginning of the upper lateral line. The second bar extends under the first to fifth dorsal spines and fades at the upper lateral line. The third bar extends under the sixth to tenth dorsal spines and fades gradually at about the level of the lower lateral line. The fourth bar extends below the eleventh to fourteenth dorsal spine and forms a squarish, well-defined black blotch between the upper lateral line and the level of the lower. Below the blotch, the bar is faint and fades just before reaching the anal fin base between the fourth and sixth spines. The fifth bar extends under the first to fourth dorsal rays and fades just before reaching the anal fin base between the seventh spine and the second ray. The sixth bar extends from the end of the dorsal base to the end of the anal base. The seventh bar occurs on the caudal peduncle, somewhat closer to the caudal base than to the sixth bar. The third bar is the widest and the width of the others and of the interspaces gradually decreases anteriorly and posteriorly from it. A median, well-defined vertically elongate black blotch occurs behind the caudal base and in contact with it.

A more or less diffuse longitudinal band extends from the beginning of the upper lateral line to the third vertical bar. Below this band, the sides of the body have silvery reflections. The belly and breast are white, sharply contrasting at the isthmus with the dark-pigmented branchiostegal membrane which is jet-black under the subopercle.

The nape, interorbital, dorsal surface of the snout and the upper lip are dark gray gradually merging into light brownish-gray on the suborbital, cheek and preopercle. The interopercle is silvery-white. A diffuse dark blotch covers the middle third of the posterior half of the subopercle. The rest of the subopercle is silvery. The opercle is silvery, somewhat dusky above. The chin and the lower lip are dusky. There is a row of three or four chalky-blue spots under the eye and one or two similar spots on the preopercle.

The upper lateral line is set off from the lighter background color by small, well-defined black spots, one on each scale. The lower lateral line is unspotted.

The dorsal and anal fin are dusky with alternating dark and light spots on the interradiation membranes. Similar spots occur on the basal half of the dusky caudal fin. The pectoral fin is colorless and the pelvic is dusky.

In the two young and the four juvenile paratypes, the branchiostegal membrane is not yet pigmented with dark and the chalky-blue spots and the subopercular blotch are not developed. In the juveniles, the spotting on the fins is still undeveloped. Otherwise, these specimens agree with the above color description.

The present new species is a typical member of the well defined *Thorichthys* group, recently discussed and diagnosed by Miller and Nelson (1961: 1, 2). These authors also listed the eight nominal species currently referable to *Thorichthys* and their original references which therefore will not be repeated here.

The higher number of gill rakers and the coloration of the upper lateral line, distinguish *Cichlasoma passionis* from the other species of the *Thorichthys* group. It is further distinguished from *Cichlasoma aureum*, *C. helleri* and *C. ellioti* by the absence of supplementary lateral lines on the caudal fin, the more numerous pectoral rays and the longer anal base. Specimens from southern Mexico (Rio Jaltepec, UMIM 3541; Rio Jalcomulco, 3542) with which the types of *C. passionis* have been compared, are referable to either *C. helleri* or *C. ellioti*. These two nominal species are

very closely related and further study may show that *C. ellioti* is synonymous with *C. helleri*. The form tentatively referred to *C. aureum* by Miller and Nelson (1961: 4) appears to be conspecific with the specimens from southern Mexico discussed above. An adult specimen from the Rio Motagua, Guatemala (UMIM 4015) with which *C. pasionis* has also been compared, represents, in the author's opinion, the true *C. aureum*. In *C. aureum*, the pectoral fin is much shorter and less pointed than in *C. pasionis*.

In addition to the greater number of gill rakers and the coloration, *Cichlasoma pasionis* differs from *C. callolepis* in the less numerous dorsal spines, greater number of anal spines and the longer pectoral fin. Young to adult topotypes of *C. callolepis* (UMIM 4898), recently redescribed by Miller and Nelson (1961) and kindly sent by Miller, have been examined.

The less numerous anal spines, greater number of gill rakers, longer pelvic fin and the coloration of the upper lateral line, distinguish *Cichlasoma pasionis* from *C. affine* and *C. meeki*. In the number of dorsal spines and dorsal rays, *C. pasionis* agrees with *C. meeki* but differs from *C. affine* in which the number of dorsal spines is greater and the dorsal rays less numerous. The subopercular spot is well defined and conspicuous in *C. meeki*, diffuse and much smaller in *C. pasionis* and obsolete or nearly so in *C. affine*. Topotypes of *C. affine* (UMIM 4018) and *C. meeki* (UMIM 2335), have been examined.

Two species of the *Thorichthys* group, *Cichlasoma hyorhynchum* and *C. champotonis*, are syntopic with *C. pasionis* in the Río de la Pasión at Sayaxché. The three species were collected together with a seine along the bank, in water up to about three feet deep. Fifty young to adult specimens of *C. hyorhynchum* (UMIM 4019) and forty-nine juvenile to adult specimens of *C. champotonis* (UMIM 4016) were obtained. Both *C. hyorhynchum* and *C. champotonis* were previously recorded only from their type localities. Further exploration may show that *C. pasionis* is more widely distributed in the Río Usumacinta system.

The number of dorsal rays, anal spines and gill rakers, and the coloration, distinguish *Cichlasoma pasionis* from *C. hyorhynchum* and *C. champotonis*. It agrees with *C. hyorhynchum* in the number of pectoral rays and in the absence of supplementary lateral lines on the caudal fin, but differs in these characters from *C. champotonis*. In the number of dorsal spines, *C. pasionis* agrees

with *C. champotonis* and differs from *C. hyorhynchum* in which the number of dorsal spines is greater. The three species are compared in Tables 1 through 5 on the basis of meristic characters.

In addition to *Cichlasoma hyorhynchum* and *C. champotonis*, twentyone species of fishes were collected with *C. pasionis* in the Río de la Pasión at Sayaxché. These species are comprised in sixteen genera and nine families as follows: *Lepisosteus tropicus* (Lepisosteidae); *Rhamdia guatemalensis* (Pimelodidae); *Potamarius nelsoni* (Ariidae); *Ictalurus meridionalis* (Ictaluridae); *Astyanax fasciatus*, *Chirodon compressus*, *Brycon guatemalensis* (Characidae); *Belonesox belizanus*, *Gambusia sexradiata*, *Carlhubbsia kideri*, *Phallichthys fairweatheri*, *Mollienesis* sp. (Poeciliidae); *Thyrinops guatemalensis* (Atherinidae); *Cichlasoma salvini*, *C. multifasciatum*, *C. octofasciatum*, *C. melanurum*, *C. irregulare*, *C. maculicauda*, *Petenia splendida* (Cichlidae); *Batrachoides godmani* (Batrachoididae). Two other species, *Megalops atlantica* (Megalopidae), the tarpon, and *Centropomus* sp. (Centropomidae), the snook, were frequently seen in the area but not collected. The total of twenty-six species in eighteen genera and eleven families, known to occur at Sayaxché, indicates a relatively rich and varied fish fauna for the Río de la Pasión.

TABLE 1  
 FREQUENCY DISTRIBUTION OF NUMBER OF DORSAL SPINES,  
 DORSAL RAYS AND PECTORAL RAYS IN THREE SYN-  
 TOPIC SPECIES OF *CICHLASOMA* FROM THE  
 RÍO DE LA PASIÓN AT SAYAXCHÉ,  
 GUATEMALA.

| Species                     | No. | Dorsal spines |    |    |    |      | Dorsal rays |    |    |      |      | Pectoral rays |    |    |      |      |
|-----------------------------|-----|---------------|----|----|----|------|-------------|----|----|------|------|---------------|----|----|------|------|
|                             |     | 14            | 15 | 16 | 17 | Mean | 9           | 10 | 11 | 12   | Mean | 13            | 14 | 15 | 16   | Mean |
| <i>C. champo-<br/>tonis</i> | 46  | 1             | 43 | 2  |    | 15.0 | 5           | 35 | 6  | 11.0 |      | 2             | 41 | 3  | 15.0 |      |
| <i>C. pasionis</i>          | 8   |               | 8  |    |    | 15.0 | 8           |    |    | 10.0 | 1    | 7             |    |    | 13.9 |      |
| <i>C. hyorhyn-<br/>chum</i> | 50  |               | 5  | 41 | 4  | 16.0 | 37          | 13 |    | 9.3  | 9    | 41            |    |    | 13.8 |      |



TABLE 2

FREQUENCY DISTRIBUTION OF NUMBER OF ANAL SPINES AND ANAL RAYS IN THREE SYNTOPIC SPECIES OF *CICHLASOMA* FROM THE RÍO DE LA PASIÓN AT SAYAXCHÉ, GUATEMALA.

| Species               | No. | Anal spines |    |   |    |    |      | Anal rays |    |     |      |
|-----------------------|-----|-------------|----|---|----|----|------|-----------|----|-----|------|
|                       |     | 6           | 7  | 8 | 9  | 10 | Mean | 7         | 8  | 9   | Mean |
| <i>C. champotonis</i> | 46  | 3           | 41 | 2 |    |    | 7.0  | 25        | 21 | 8.5 |      |
| <i>C. pasionis</i>    | 8   |             |    | 7 | 1  |    | 8.1  | 1         | 6  | 1   | 8.0  |
| <i>C. hyorhynchum</i> | 50  |             |    | 2 | 39 | 9  | 9.1  | 12        | 36 | 2   | 7.8  |

TABLE 3

FREQUENCY DISTRIBUTION OF NUMBER OF GILL RAKERS ON FIRST ARCH IN THREE SYNTOPIC SPECIES OF *CICHLASOMA* FROM THE RÍO DE LA PASIÓN AT SAYAXCHÉ, GUATEMALA.

| Species               | No. | Gill rakers |    |    |    |    |    |    |    |    |    | Mean |      |
|-----------------------|-----|-------------|----|----|----|----|----|----|----|----|----|------|------|
|                       |     | 10          | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |      | 20   |
| <i>C. champotonis</i> | 46  | 2           | 27 | 17 |    |    |    |    |    |    |    |      | 11.3 |
| <i>C. pasionis</i>    | 4*  |             |    |    |    |    |    |    |    | 1  | 2  | 1    | 19.0 |
| <i>C. hyorhynchum</i> |     |             |    |    |    | 2  | 8  | 31 | 9  |    |    |      | 15.9 |

\* Gill rakers not fully developed in the four juvenile paratypes.

TABLE 4

FREQUENCY DISTRIBUTION OF NUMBER OF SCALES IN UPPER AND LOWER LATERAL LINE IN THREE SYNTOPIC SPECIES OF *CICHLASOMA* FROM THE RÍO DE LA PASIÓN AT SAYAXCHÉ, GUATEMALA.

| Species                           | No. | Upper lateral line |    |    |    |      |      | Lower lateral line |   |    |    |    |    |    |    |      |
|-----------------------------------|-----|--------------------|----|----|----|------|------|--------------------|---|----|----|----|----|----|----|------|
|                                   |     | 16                 | 17 | 18 | 19 | 20   | 21   | Mean               | 6 | 7  | 8  | 9  | 10 | 11 | 12 | 13   |
| <i>C. champo-</i><br><i>tonis</i> | 46  |                    | 2  | 23 | 13 | 8    | 19.6 |                    |   | 1  | 4  | 13 | 26 | 1  | 1  | 10.5 |
| <i>C. pasionis</i>                | 2*  |                    |    | 1  | 1  | 20.0 |      |                    |   |    | 2  |    |    |    |    | 10.0 |
| <i>C. hyorhyn-</i><br><i>chum</i> | 50  | 3                  | 6  | 19 | 18 | 4    | 18.3 | 2                  | 9 | 15 | 16 | 8  |    |    |    | 8.4  |

\* Lateral line scales not fully developed in the two young and the four juvenile paratypes.

TABLE 5

FREQUENCY DISTRIBUTION OF TOTAL NUMBER OF SCALES IN LATERAL LINES IN THREE SYNTOPIC SPECIES OF *CICHLASOMA* FROM THE RÍO DE LA PASIÓN AT SAYAXCHÉ, GUATEMALA.

| Species                | No. | Upper and lower lateral line |    |    |    |    |    |    |    |    |    |    | Mean |
|------------------------|-----|------------------------------|----|----|----|----|----|----|----|----|----|----|------|
|                        |     | 23                           | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 |      |
| <i>C. champo-tonis</i> | 46  |                              |    |    | 1  |    | 2  | 7  | 21 | 10 | 4  | 1  | 29.5 |
| <i>C. passionis</i>    | 2*  |                              |    |    |    |    |    |    | 1  | 1  |    |    | 30.0 |
| <i>C. hyorhynchum</i>  | 50  | 1                            | 4  | 7  | 8  | 17 | 6  | 6  | 1  |    |    |    | 26.7 |

\* Lateral line scales not fully developed in the two young and the four juvenile paratypes.

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